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Attorney Docket: 060256-0265154
Client Reference: T296069US/BR/KOP

O I P E S C I T Y
APR 22 2004
P A T E N T & T R A D E M A R K O F F I C E

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of: HOTTINEN Confirmation Number: 1404
ET AL.

Application No.: 09/445,808

Group Art Unit: 2662

Filed: February 29, 2000

Examiner: Lee, Timothy L.

Title: CELLULAR RECEIVER AND RECEPTION METHOD

REQUEST FOR RECONSIDERATION

RECEIVED

APR 23 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Technology Center 2600

Sir:

In response to the Office Action dated January 5, 2004, please reconsider the patentability of the pending claims based on the arguments provided herein. The Office Action rejected claim 1 under 35 U.S.C. §102 as being anticipated by Sugimoto et al. (U.S. 5,579,304; hereafter "Sugimoto") and rejected claims 2-16 under 35 U.S.C. §103 as obvious from Sugimoto. Claims 6 and 8 were also rejected under 35 U.S.C. §103 as obvious from Sugimoto and Moshavi: "Multi-User Detection for DS-CDMA Communications, October 1996, IEEE Communications magazine, Pages 124-136" (hereafter "Moshavi")

TRAVERSAL FOR FAILURE TO TEACH OR SUGGEST CLAIM FEATURES

Applicant traverses the rejections because the cited prior art fails to teach or suggest all the features recited in the rejected claims. For example, Sugimoto and Moshavi, analyzed individually or in combination, fail to teach or suggest the claimed reception method "wherein the estimate includes one or more estimates of a received user signal, and the effect of the symbols estimated on the symbol level is subtracted from the received sum signal, whereby a narrowband, symbol-level residual signal is obtained," as recited in independent claim 1 and its independent claims.

Similarly, Sugimoto and Moshavi, analyzed individually or in combination, fail to teach or suggest the claimed reception method including "generating an estimate for the

received signal, wherein the estimate includes one or more estimates of a received user signal, and the effect of the symbols estimated on the symbol level is subtracted from the received sum signal, whereby a narrowband, symbol-level residual signal is obtained, correlating the received signal by a particular spreading code, whereby a first symbol-level signal is obtained, correlating the computed estimate by the same spreading code, whereby a second symbol-level signal is obtained, and subtracting the second symbol-level signal from the first symbol level signal, whereby a narrowband, symbol-level residual signal is obtained,” as recited in independent claim 2 and its dependent claims.

Further, Sugimoto and Moshavi, analyzed individually or in combination, fail to teach or suggest the claimed receiver comprising “means for estimating parameters of unknown signals from a narrowband residual signal, whereby a narrowband, symbol-level residual signal is obtained,” as recited in independent claim 14 and its dependent claims.

In accordance with the teachings of Sugimoto, interference cancellation is performed on a broadband signal. Specifically, Figure 4 illustrates Sugimoto’s interference cancellation stage that generates a symbol estimate $R_{i,j}$, which is multiplied by a spreading code in multiplier 30. Thus, Sugimoto teaches a system in which a broadband signal is obtained. This signal is then subtracted from the received broadband signal in adder 32; as a result, Sugimoto merely teaches a method for obtaining a broadband signal from which interference has been removed.

To the contrary, in accordance with the claimed invention, the effect of known signals is removed from the received signal at the symbol level. Specifically, as disclosed in the specification, symbol estimates are generated in the multi-user decoder 208. These symbol values are then output to the searcher unit 210, which performs interference cancellation on a symbol level. As a result, a symbol level residual signal is obtained. Therefore, interference cancellation is performed on a narrowband signal. Sugimoto fails to disclose this kind of solution.

Moshavi fails to remedy this deficiency of Sugimoto because Moshavi merely teaches the possibility of using a matched filter as part of a circuit configuration. Therefore, Sugimoto and Moshavi, analyzed individually or in combination, fail to teach or suggest all the features recited in the rejected claims.

Accordingly, claims 1-16 are patentable over the cited prior art.

CHALLENGE OF IMPROPER CONCLUSION OF INHERENCY

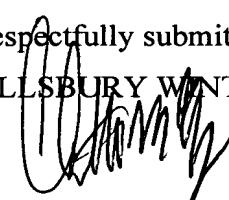
The Office Action has incorrectly asserted that, in Sugimoto, "A residual symbol value is found that is an error that was made in estimating the transmitting station's symbol value in the first interference canceling stage (whereby a narrowband, symbol level residual signal is obtained). It is inherent that the error is found by subtraction with the sum signal..." (see page 2, last line) Applicant challenges this conclusion of inherency.

Applicant does not contest that it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom; however, the analysis of Sugimoto is simply incorrect. In fact, the error is actually calculated in the correlator 26 by correlating the signal with the desired spreading code. Therefore, no subtraction is performed. In fact, the "error" is actually added into the symbol estimate of the previous stage. Thus, the Office Action's characterization of Sugimoto is incorrect.

Accordingly, claims 1-16 are patentable over the cited prior art.

All objections and rejections having been addressed, Applicant requests issuance of a notice of allowance indicating the allowability of all pending claims. If anything further is necessary to place the application in condition for allowance, Applicant requests that the Examiner contact Applicant's undersigned representative at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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